Running head: APPARATUS MAINTENANCE

Leading Community Risk Reduction

Developing an Apparatus Maintenance Program For The Stoneham, Massachusetts Fire Department

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Abstract

The present study explores issues related to fire apparatus maintenance. The problem addressed was that there was not an apparatus maintenance program for the Stoneham Fire Department. The purpose of this research was to identify strategies that can be used by the Stoneham Fire Department to improve its fire apparatus maintenance operations.

Descriptive research was used to answer the following questions: 1. What are the goals of an apparatus maintenance program? 2. What components are critical to an effective apparatus program? 3. What are recognized as appropriate criteria for apparatus maintenance personnel? 4. Is there a benefit to combining an apparatus maintenance program with surrounding towns?

A review of literature and a survey to which 21 of 34 members of the Metro Fire District responded was undertaken. Results of the survey indicated that less than one-half of all participating fire departments rely upon the services of an emergency vehicle technician (EVT) for apparatus maintenance, that over one-half contract out maintenance functions or depend upon services provided by the Department of Public Works, and that when dedicated mechanics are on staff at a fire department, they are as likely to be firefighters as civilians.

Recommendations emerging from the research project include the development of a task force to study the possibilities and strategies for creating a combined apparatus maintenance program for the towns of Stoneham, Wakefield, and Reading.

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Developing an Apparatus Maintenance Program for The Stoneham, Massachusetts Fire Department

Introduction

The problem addressed was there was not an apparatus maintenance program for the Stoneham Fire Department. The purpose of this research was to identify strategies that can be used by the Stoneham Fire Department to improve its fire apparatus maintenance operations.

In conducting this research, descriptive research was employed. The following four research questions were posed at the outset of the study:

1. What are the goals of an apparatus maintenance program?
2. What components are critical to an effective apparatus maintenance program?
3. What are recognized as appropriate criteria for apparatus maintenance personnel?
4. Is there a benefit to combining an apparatus maintenance program with surrounding towns?

Background and Significance

The Stoneham, Massachusetts Fire Department (the department) is a fully paid department consisting of 40 uniformed employees. There are 36 of the employees considered to be line personnel, with the remaining four holding staff positions. The department is divided into four work groups. Each work group works a 42-hour work schedule consisting of 24 hours on duty, 24 hours off duty, 24 hours on duty, and 120 hours off duty. In calendar year 2003, the department answered 2,899 emergency calls. On a normal

shift they operate with two engines and one ladder truck. Other equipment the department employs are two reserve engines, three command/staff vehicles, one pickup truck with a slide on skid pump, and one F450 with a versa-lift boom and a rescue boat. The operating budget of the department is 2.6 million dollars.

The Town of Stoneham is 10 miles north of the City of Boston with interstates Route 93 and Route 128 running through it. Stoneham's land area is 6.6 square miles. The town has a population of about 21,194. Some 32% of the Town's land area is in the Middlesex Fells Reservation, one of the State of Massachusetts largest parks (J.J. Hanright, personal communication, October 18,2004).

The Stoneham Fire Department, like other relatively small fire departments in the United States, must regularly confront the necessity of maintaining the various apparatus it employs. Fire protection equipment represents a major capital investment for any community (Brown, 1994). The development of an appropriate fire apparatus maintenance program that is both cost-effective and efficient is a primary objective for the Stoneham Fire Department.

For more than a decade, the apparatus maintenance movement has been building in the United States as more and more local officials, fire department administrators, firefighters, firefighter associations, and national regulatory boards address this important issue (Elliot, 1999).

The National Fire Protection Agency (NFPA) has taken a proactive role in expanding the standards against which all

aspects of fire apparatus maintenance are to be assessed. NFPA 1915 is the Standard for a Fire Apparatus Preventive Maintenance Program. Contained in NFPA 1915 are minimum requirements for a preventative maintenance (PM) program for fire apparatus. These requirements are augmented by NFPA 1500, Standard on Fire Department Occupational Health and Safety Program, and NFPA 1071, Standard for Emergency Vehicle Technician Qualifications. Taken together, these NFPA standards serve as a comprehensive set of standards and guidelines for the development and assessment of fire apparatus maintenance and PM efforts at the local level (Steffens, 2000).

This research project is significant to the Stoneham Fire Department and the National Fire Academy in that a comprehensive fire apparatus maintenance program will have a direct effect on the safety of the Stoneham firefighters and community, as well as promote risk reduction.

Literature Review

The NFPA Standards

NFPA 1915 (2000) is the standard for Fire Apparatus Preventative Maintenance Programs. The standard defines a fire apparatus as “any vehicle used for fire suppression or support by a fire department, fire brigade, or other agency responsible for fire protection” (p.4). The standard further defines maintenance as “the act of servicing fire apparatus and equipment within a time frame prescribed by the authority having jurisdiction. Servicing of apparatus is based on manufacturers’ recommendation, local experience, and operating conditions in

order to maintain the vehicle and its components in proper operating condition” (p.4). In describing PM, NFPA 1915 makes reference to the act or work of keeping equipment in order by performing necessary preventive actions in a routine manner with the goal of preventing failure or breakdown.

Generally, NFPA 1915 (2000) contends that it is the responsibility of the fire protection authority to develop and implement a schedule of service and maintenance for fire apparatus, systems, and components. Fire apparatus component and system inspections are integral to the PM process. They should also be structured in response to recommendations from the manufacturer of the equipment, local experience, and operating condition. Written documentation of maintenance activities, apparatus problems, and other critical data is also required under the standard.

NFPA 1915 (2000) is a comprehensive standard that addresses general inspection and maintenance issues for all types and varieties of fire apparatus, pumping systems, aerial device systems, line voltage electrical systems, air systems, etc. The standard also maintains that any individual performing inspections or maintenance should meet the qualifications of NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications. Another standard that also applies is NFPA 1071 (2000), the Standard for Emergency Vehicle Technician Professional Qualifications, establishing the minimum job performance requirements for a person qualified as an emergency vehicle technician engaged in the inspection,

diagnosis, maintenance, repair, and testing of an emergency response vehicle.

An Emergency Vehicle Technician (EVT) is identified by NFPA 1071 (2000) as “an individual possessing a recognizable certificate, professional standing, or documented skill who has acquired the knowledge, training, and experience needed to deal with the maintenance of fire apparatus” (p.5). In essence, individuals who work in PM and minor repair maintenance on fire apparatus must meet increasingly stringent professional qualification standards.

Another standard that is significant is NFPA 1500 (2002), the Standard on Fire Department Occupational Safety and Health Program. This standard affirms that “any fire department shall consider safety and health as primary concerns in the specification, design, acquisition, construction, operation, maintenance, inspection, and repair of all fire department apparatus” (p.14). Most specifically, the standard calls for weekly inspection of all fire apparatus, 24-hour inspection after any use or repair, and the establishment of a thoroughly documented PM program.

James T. Steffens (2000), a retired fire chief, noted that these new standards supplement existing requirements of NFPA 1500, which deals with the inspection, maintenance, and repair of fire apparatus as well as other standards that define the role of vehicle operators in a preventative maintenance program. Although existing standards have been in force for many years, the main focus have been on areas other than emergency vehicle

maintenance, and their references to maintenance have been secondary. According to Steffens, the new NFPA standards make it clear that fire departments must become more proactive in ensuring that a movement from maintenance as a repair function to PM take place within their department or is contracted out to qualified personnel.

Preventive Maintenance Issues and Fire Departments

William C. Peters (1994) stated that there are several important reasons for establishing a proper PM program for fire apparatus(p.336). Among these are:

1. Due to the critical nature of the service, fire apparatus must always be in top condition and ready to perform instantaneously;
2. The safety of firefighters and the general public relies heavily upon apparatus of all types that is in excellent working order;
3. The high cost of modern fire apparatus mandates that it be maintained in top condition to extend its working life and protect a major capital investment.

Additionally, as Peters points out, legal action and financial judgments can result from improperly maintained apparatus.

While most firefighters and fire department administrators are well aware of the importance of proper and regular programs of PM for fire apparatus, Peters (1991) suggests that PM is often overlooked as agency managers struggle to meet equally competing needs. However, the safety of the crew and the general

public can be significantly affected by the condition of emergency vehicles.

Daniels, Hardwick, and Wilmoth (1996) make the case that apparatus used for emergency services must remain in a constant state of readiness. The key to PM, which must take a central role in ensuring that maintenance activities (as opposed to repairs or shop inspections that are scheduled) take place and are performed in accordance with manufacturers' instructions, is the operator of the apparatus. Similarly, these researches call for training drivers for PM and ensuring that EVTs are involved in driver training.

Steffens (1995) adds that there are two primary considerations in developing and managing an effective emergency vehicle maintenance program. First, it is necessary to determine who performs preventative and corrective maintenance on the vehicles. Second, identification of vehicle inspection schedules and the items to be included are also crucial.

Peters (2004) is a staunch advocate of PM for fire apparatus. Peters noted, for example, that PM plays a vital role in accomplishing a departmental mission of saving lives and protecting property. Every PM program, says Peters, begins with the vehicle operator. Routine maintenance checks of the levels of oil, fuel, and coolant and addressing items such as wear, neglect, misuse, and abuse are an absolute necessity. The first line of maintenance should begin with the operator at the start of each shift performing a pretrip inspection, similar to that

of the operator of a commercial vehicle possessing a commercial driver's license.

Glatts (2000) believes that it is important to combine apparatus safety, maintenance, and training. Training of operators and others involved in routine PM is necessary and can enhance a safety effort. For example, an annual fire pump service not only trains firefighters to operate a pump more efficiently, it also serves to test equipment, potentially identifying functional problems, and to reassure a community that a fire department is ready for service.

William A. Brown (1992) described the steps needed to establish and then implement an effective maintenance program for fire protection agencies. Integral to fleet maintenance is that parts are replaced prior to failure. The replacement schedule should be based on real maintenance data and proper maintenance done every time. A "no excuses implementation" strategy is, says Brown, necessary in any effective PM or fleet PM effort. Management must take a lead role in follow-through and follow-up, and appropriate training for maintenance personnel and operators is needed, according to Brown.

The International Society of Fire Service Instructors (1999) argued that to be successful as a driver/operator, it is not necessary to become an expert in apparatus maintenance. Drivers/operators should be able to complete a routine maintenance check of an apparatus, know the required checks that are to be performed daily, weekly, monthly, or periodically, and recognize the importance and necessity of such checks and

inspections. A systematic fire apparatus maintenance program is a necessity, along with keeping accurate and thorough records of all maintenance activities.

Cook (1994) feels an important development in the area of fire apparatus maintenance is the creation of new and more professional fire mechanics associations. Cook believes that such groups help to direct attention to the overall importance of apparatus maintenance. They also serve as a source of training, certification, and information sharing for this group of professionals. Creating local organizations or chapters of national associations can be instrumental in improving a departments' maintenance effort. The National Association of Emergency Vehicle Technicians (NAEVT) has been instrumental in facilitating the rise of such associations and offers support to local associations.

Radtke (1989) suggests that everyone at the station must take a role in ensuring that apparatus are properly maintained, while motivating EVTs and driver/operators for better maintenance. Rewards such as specific fire department caps and gift certificates may be given each month to team members for the best maintained vehicle. In a best practices program, Radtke believes that everyone in the department should be involved in doing maintenance and recording activities. As Looney (1995) suggests, regular maintenance not only helps to prevent costly down time and apparatus failures or malfunctions, it also prevents costly repairs from being made, unites staff in a

concerted effort to increase efficiency and effectiveness, and improves safety records.

Baily (2000) sees vehicle apparatus maintenance as nothing less than a matter of life and death. Vehicles that are poorly maintained are associated with increased risk for personal injury to firefighters.

Consolidation of Services

Giorgio (2000) believes that consolidation offers both advantages and disadvantages. On the plus side, economies of scope and scale can be realized by the commingling of resources. Efficiency can be improved via consolidation, but there are costs associated with this strategy. Negotiating multiple organized labor contracts, sorting out command and control responsibilities, and ensuring that projected cost savings will be realized are integral to the process.

In discussing a consolidation effort undertaken in the Cherry Hill, New Jersey area, Giorgio (2000) noted that six independent fire districts were merged into one single district. A streamlined organization resulted from the consolidation, but designing a new communication and command system took time and required more effort than was anticipated. It is important, when considering consolidation of fire agencies, to make a plan for maintenance activities as well as staffing issues.

Barden and Zollner (1998) described efforts undertaken by Riverside and Moreno Valley, California. Needing to add a station to enhance each agency’s service capability, the two agencies elected to pool funds and other resources to create a

single station that realized cost savings and increased coverage. Shared apparatus and maintenance functions were integral to the plan. This innovative partnership served to reduce costs, provide a higher level of service, and open the way to a cooperative working relationship between the two departments.

Another strategy identified by Jenson and Snook (2000) is the upgrading of small volunteer departments into professional departments. Some agencies elect to consolidate via contracts or annexation; this is particularly appealing to fire districts in a metropolitan or community area. The trend toward cooperative ventures, in the view of Jenson and Snook, may be emerging as agencies seek cost savings as well as greater efficiency and enhanced capacity to deliver high quality services.

Emergency rescue vehicle service centers, in the opinion of Wilde (1996), are becoming increasingly popular forms of function consolidation. These service centers are independent, privatized for-profit business entities. Staff at a service center usually meets EVT certification requirements and follow the various NFPA standards. Wilde reports service centers can bring greater expertise to the departmental maintenance function. Such strategies for selected maintenance and inspection activities are often capable of providing for services and jobs that require specialized equipment that many fire departments cannot afford. They can help to relieve the exposure liability of a department that might do the work that its staff is not adequately trained to do.

Conversely, Wilde (1996) notes that unit down time may be increased by sending apparatus to a service center for maintenance that could be performed in-house. Per-hour staff costs are often higher in this approach and many in house repairs or maintenance activities are more affordable. Issues related to the loss of control of the apparatus being serviced are also problematic.

Cavette (2004) contends that outsourcing apparatus maintenance results in jobs being done faster, more accurately and more cost-effectively than your own personnel.

Procedures

Descriptive research consisting of literature review and a survey was used in preparing this paper. The research began in September 2004. A search of articles pertaining to apparatus maintenance, regional consolidation, NFPA 1500, NFPA 1915, and NFPA 1071 were located using the LRC computerized card catalog system and the Stoneham Public Library inter-library loan network. Some articles were from a personal library of fire service periodicals. A survey of the Metro Fire District was conducted in November of 2004.

The goal of the survey and data collection portion of the study was to gain input from local fire departments regarding their current fire apparatus maintenance efforts, the financial and personnel costs of those efforts, and the location at which the maintenance was undertaken. An important consideration was whether or not maintenance personnel at the participating fire departments were certified as EVTs.

To obtain additional information regarding PM and maintenance activities, a survey instrument (Appendix) was developed. The instrument captures information regarding such issues as the number of emergency vehicles owned by the fire department, the presence or absence of a dedicated mechanic at the fire department, location of equipment maintenance, designated repair location, certification of vehicle service people, maintenance/repair budget, and annual cost for employees of the fire department. Items in the survey were developed after foregoing review of relevant literature.

The survey instrument was sent via mail to a total of 34 potential respondents. Respondents were drawn from among the members of the Massachusetts Metro Fire District (Metro Fire), of which Stoneham Fire Department is a member. Metro Fire is an association of 33 communities plus the Massport (Logan Airport) Fire Department. The association was formed for the purpose of updating, expanding, and controlling mutual aid in the area, and to act as a common entity for exploring and improving management activities and fire protection operations in the region. Metro Fire encompasses the Boston metropolitan area within Route 128 perimeter. The Metro Fire District members provided an easily accessible and ready available convenient sample of fire personnel.

In addition to serving as a medium of information and expertise exchange and planning, the Metro Fire District also facilitates resource sharing. In emergency situations, member fire departments will assist one another in responding to

crisis. The organization functions as a source of mutual support for all members, whose shared mission and responsibilities make participation in such a forum a necessity.

Given the goal, to identify strategies that can be used by the Stoneham Fire Department to improve its apparatus maintenance operations, the target population of neighboring, associated fire departments was appropriate to the scope of the study. The study provides sufficient information about mutual problems impacting upon adjacent, inter-related communities serving a largely urban population. By extension, other metropolitan areas with similar associations and concerns will also benefit from the information generated by the study.

In addition to serving as medium of information and expertise exchange and planning, the Metro Fire District also facilitates resource sharing. In emergency situations, member fire departments will assist one another in responding to crisis. The organization functions as a source of mutual support for all members, whose shared mission and responsibilities make participation in such a form a necessity.

Once representatives of each of the 34 member departments of the Metro Fire District received a copy of the survey instrument and introductory letter, a follow-up telephone call was made to the authority likely to complete the survey. A total of 21 completed surveys were returned via mail to the researcher, representing a return rate of 61.8 percent.

After the responses were received, data analysis was undertaken. Given the brevity and simplicity of the survey

instrument, only simple results were computed. These statistics consisted, where appropriate, of percentages, means or averages, and ranges.

After completing basic descriptive statistical computations, the data was compressed into tables.

The research and analysis were limited to the articles and text in the literature review, and by the six month time limit for the completion and submission of the project as required by the National Fire Academy Executive Fire Officer Program. The American Psychological Association Fifth Edition was the guideline used for the project.

The procedures used to complete this research were based on the assumption that the literature reviewed was factual, objective, unbiased, and the survey was answered honestly.

Results

Data Presentation

A survey was conducted of the Metro Fire District on vehicle maintenance (Appendix). A total of 21 out of 34 potential respondents from the complete membership of the Metro Fire District responded to the survey (61,8%). The first item of the survey asked respondents to identify the total number of emergency vehicles currently operated and maintained by the fire department. Respondents, on average indicated that their departments had 25.6 emergency vehicles. A fairly broad range of 9 to 33 vehicles was also reported, with a total of 537 vehicles owned by the sample.

The second item asked respondents to identify whether or not their department had dedicated mechanics, if the mechanic was a civilian or a firefighter, and the total number of mechanics on staff. Seven of the respondents (33.3%) indicated that they did not currently have a dedicated mechanic on their staff. Table 1 presents data regarding the 14 departments with dedicated mechanics.

Table 1

Mechanic Staffing	#	%
Dedicated Civilian	8	38.1
Dedicated Firefighter	6	28.6

Additionally, respondents identified the number of mechanics on their departments. One department indicated that it had four part-time mechanics whereas the remaining 13 departments indicated one or two staff mechanics for an average of 1.5 mechanics for each department.

A related question on the survey instrument asked respondents to identify whether or not any of the mechanics that service or repair emergency vehicles are certified EVTs. Nine of the respondents (42.9%) reported that their mechanics were EVTs. The balance of the respondents (57.1%) indicated that they did not currently have EVTs servicing or repairing their emergency vehicles.

Two other questions on the survey captured information in regards to where equipment is maintained and who performs repairs as opposed to routine maintenance.

Table 2

Location of Equipment Maintenance	#	%
In-House	7	33.3
Department of Public Works	1	4.8
Sent Out	1	4.8
In-House & Department of Public Works	0	0
In-House & Sent Out	7	33.3
Department of Public Works and Sent Out	5	23.8

This data indicates that the respondents from the Metro Fire District tend to favor in-house equipment maintenance or a combination of in-house and externally provided maintenance for emergency vehicles.

The next table presents a visual depiction of respondents identification of those who perform repairs on equipment.

Table 3

Who Performs Repairs	#	%
In-House	6	28.6
Department of Public Works	0	0
Sent Out	2	9.5
In-House & Department of Public Works	0	0
In-House & Sent Out	8	38.1
Department of Public Works & Sent Out	5	23.8

This data also indicates a preference for in-house, in-house and sent out, Department of Public Works and Sent Out. It is likely that departments that maintain in-house mechanics are less likely than departments without such mechanics to send out equipment for maintenance or repair. It is also clear that

smaller departments may rely upon the services of mechanics at the community Department of Public Works.

Respondents were asked to identify budgetary allocations for maintenance and repair of emergency vehicles. The range of budgetary allocations reported was $13,000 to $268,000 per year. The 21 respondents reported a total of $974,401 spent on these functions in a year, with an average of $54,133 per respondent. However, three respondents did not complete this item and others included in their figures, the cost for mechanics on their staff or other expenses not directly related to maintenance and repair of emergency vehicles (fuel and oil costs).

The final item on the survey asked respondents to report the annual cost for employees in several job descriptions (mechanic, firefighter, lieutenant, captain, district chief, deputy chief, and chief). Not all respondents provided a complete data for each of these job categories. Others did not identify the total number of jobholders in each category. This makes it impossible to determine budgetary costs for these positions.

Research Questions

1. What are the goals of an apparatus maintenance program?

As NFPA 1915 (2000) has indicated, the program goals are to ensure that equipment will function properly, be maintained in working order and contribute to the overall efficiency of a firefighting effort. Maintenance is also, according to Brown (1992), recognized as a cost savings strategy that reduces budgetary allocations for new equipment and extends the life of fire apparatus.

2. What components are critical to an effective apparatus maintenance program?

The components of an apparatus maintenance program include daily, weekly, monthly, and periodic activities designed to ensure that equipment is in good working order, clean, and ready for use in emergency situations. According to Peters (1994), the components of an apparatus maintenance program should be to follow manufacturers' recommendations and should conform to standards.

3. What are recognized as appropriate criteria for apparatus maintenance personnel?

The literature reviewed in this research suggests that the possession of emergency vehicle technician certification is ideal for apparatus maintenance personnel. However, not all the participants in the survey appear to have EVTs servicing their equipment. The results show that those who do not have EVTs servicing their equipment are relying on an in-house, Department of Public Works or externally contracted mechanics for maintenance.

4. Is there a benefit to combining an apparatus maintenance program with surrounding towns?

No data was obtained from the survey which would present an assessment of the opinions of chiefs in the surrounding fire departments regarding consolidation. However, the literature indicates that apparatus consolidation increases efficiency. Economies of scope and scale can be realized through the consolidation of apparatus maintenance programs, Giorgio (2000).

Steffens (2000) also takes the position that this particular approach to apparatus maintenance can result in greater reliance on EVTs as primary professionals responsible for servicing and repairing equipment.

Discussion

The research conducted provides insight into issues related to fire apparatus maintenance. First, it is clear that apparatus maintenance is an important function for any fire department. Secondly, it is also clear that this is also a costly function, and despite recommendations calling for EVTs to function as primary maintenance personnel, not all fire departments have such professionals on their staff. However, it is also pointed out that while initially expensive, reduced costs will be experienced in the long run due to maintenance. Findings also point out the advantages and cost savings involved in the consolidation of maintenance functions. Consolidation results in improved staffing while reducing the cost of staffing.

The knowledge and information gained through the literature review is convincing that there could be a benefit of combining an apparatus maintenance program with surrounding towns. The communities with which such a program could work are Wakefield and Reading. Both communities are about the same size of Stoneham and have very similar fire departments. Geographically, all three communities border each other. There is evidence that such consolidation works well and has positive results.

When the survey responses from these three communities are considered, none of the three fire departments currently have an

EVT on staff to service or repair emergency vehicles. All three of the departments send out a portion of their repair work and all three rely on either their Department of Public Works or an external service provider for equipment maintenance.

Currently, only Stoneham has a firefighter/mechanic in-house, whose first and foremost responsibility is to be a member of a suppression force. The firefighter/mechanics' schedule is the same as other line employees. Neither Wakefield nor Reading has any kind of mechanic on staff. These deficits could easily be overcome by consolidating fire apparatus maintenance activities and restructuring department budgets to fund a full time EVT. This would significantly enhance the professionalism of apparatus maintenance efforts undertaken at each of the three fire departments.

Recommendations

Based on the foregoing review of literature, data analysis and discussion, several recommendations and further research can be presented. First and most significantly, it is recommended that the communities of Stoneham, Wakefield, and Reading create a task force to study the feasibility of developing a consolidated fire apparatus maintenance program. Using guidelines provided by NFPA, such a program would have the effect of significantly enhancing maintenance activities for each of the three fire departments.

From a financial perspective, staffing such a center with two or more EVTs would be beneficial to each of the participating communities. Duplication in tools, personnel, and

other related items could be eliminated in a single maintenance and repair facility. At the same time, EVTs on staff at such a facility could work with each department to ensure that daily routine maintenance activities are appropriately carried out. One potential outcome from such a program would be the enhancement of cooperation between the three departments. Given that some equipment would experience downtime while at the repair and service facility, the three departments would be encouraged to share their apparatus more frequently than is now perhaps the case.

Additional research should be conducted by the recommended task force to determine what specific maintenance, service and repair functions need to be enhanced or improved at each of the three fire departments. This in-depth research is necessary to develop the maintenance program for the proposed facility and the specific skills and qualifications that an EVT should possess. Such research has the potential to identify current service deficits as well as the strengths of the apparatus maintenance programs at each of the three fire departments.

Given the move toward consolidation that is emerging throughout fire protection services in the United States, such a study might assist other fire departments in the Metro Fire District in conducting evaluations of their own needs. Greater coordination can be facilitated by sharing maintenance functions, resulting in an overall improvement to the firefighting capacities of these departments.

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Appendix

Fire Department survey

Directions: Please answer all of the following questions by checking the appropriate item or filling in the blanks. Thank you for participating in this study.

1. How many emergency vehicles does the fire department have (apparatus, cars, trucks, boats, etc.)?
2. Does your department have a dedicated mechanic/mechanics?
3. Where is your equipment maintained?

   In-house DPW Sent Out
4. Who performs repairs?

   In-House DPW Sent Out
5. Are any of the mechanics that service or repair your emergency vehicles certified emergency vehicle technicians (EVTs)?
6. What is your current budget for maintenance and repair of your emergency vehicles?
7. What is the annual cost for employees according to the following job descriptions?

Job Description	Annual cost
Mechanic	
Firefighter	
Lieutenant	
Captain	
District Chief	

Deputy Chief

Chief

Name and phone number of person filling out this survey:_____.